



# Successes and Challenges in Commercial Biomass Supply Chains

# Successful Development of Commercial and Large Scale Supply Chains



- Harvest supply chains have been successfully developed for several large scale Bioenergy projects
  - Corn Stover (>500k Acres Harvested) – DuPont, Abengoa, Poet, Verbio
- Large scale harvest operations effectively harvest thousands of acres per year in various areas of the country for forage and biomass operations
- Best management practices for harvesting, handling, and storage techniques are widely understood.

# Challenges Facing Harvesting Herbaceous Crops

- Working with non optimized supply chain areas
  - Producer acceptance will take time to develop
  - Compensation needs to be appropriate to current cost environment in agriculture
- Developing preprocessing capabilities that can meet the needs of a scaled supply chain
  - Developing protocols handling out-of-spec material
  - Conversion technology has to have tolerance for non standard material.
  - Limitations within the preprocessing side at a commercial scale are dictating supply chain wide changes that are often against best management practices



# Data is Key to Meeting Needs

- Visibility of data through the supply chain helps improve performance and lowers cost
  - Technology to measure performance and quantify quality have become more economical and widely available
  - Information is widely more available to all levels of the supply chain
- Connecting the harvest supply chain to the needs of the preprocess and conversion lines are imperative to a successful project.

71	3,528	15	235																
Baler Productivity %	Today Bales Produced	Today Active Balers	Bales per Active Baler																
Daily Location Performance Summary																			
Location	Bale Count	Bales Per Hour	Autoset	Flake Count	Average	Chamber Pressure Average	Speed (MPH) - On Time	Engine Productive Average	Number of Bales										
IAA	73	43	279	46	1,106	5.3	7.1	14											
Daily Crew Performance Summary																			
Supervisor	Bale Count	Bales Per Hour	Autoset	Flake Count	Average	Chamber Pressure Average	Speed (MPH) - On Time	Engine Productive Average	Number of Bales	Knocker	Shear Bolt	Plug	Other						
1	1,877	58	269	39	1,115	3.7	81.50	8.9	4										
2	770	50	291	51	1,054	5.9	64.95	8.6	3										
3	551	36	249	58	990	6.5	69.65	6.8	3										
4	495	32	316	53	1,132	6.4	74.83	4.8	3										
5	125	31	216	31	1,406	4.7	43.28	3.5	2										
Daily Baler Performance Summary																			
Supervisor	Op#	Daily Bale Count	Bales Per Hour	Autoset	Flake Count	Average	Chamber Pressure Average	Speed (MPH) - On Time	Engine Productive Average	Number of Bales	Knocker	Shear Bolt	Plug	Other	Aug to	Idle Events	Avg Idle Length	Location	
Sam	0	558	72	266	32	1,019	4.0	11.8	66	34	0						2743	3	6
Greg	1261	536	64	265	40	1,228	3.4	10.9	75	25	0						2609	2	4
Tim	0	444	49	265	38	1,043	3.3	9.6	95	5	0						2439		
Greg	0	277	33	285	57	1,000	6.5	9.1	54	6	0						2449		
Wes	0	275	76	266	37	939	5.1	9.4	39	61	0						2567	2	2
K	0	258	37	283	63	1,018	5.9	7.2	96	4	10						2560		
R	0	237	37	314	53	1,205	6.9	9.2	70	30	0						2594		
Sam	0	201	34	297	56	980	6.5	6.8	84	12	4						2751		
0	198	38	324	41	1,251	8.3	5.6	87	6	8							2715		
0	139	44	278	45	1,170	4.0	3.6	89	11	0							2640		
P	0	134	29	287	61	710	5.4	5.3	71	11	18						3639		
0	101	45	266	34	1,406	4.7	4.4	47	45	9							2716	3	6
0	73	29	337	56	1,408	5.4	3.4	65	25	10							3576	1	3
0	73	43	165	60			4.5	30	50	20							3173	1	9

